



Silicone elastomers with superior softness and dielectric properties

Yu, Liyun; Madsen, Frederikke Bahrt; Zakaria, Shamsul Bin; Skov, Anne Ladegaard

Publication date:
2016

Document Version
Peer reviewed version

[Link back to DTU Orbit](#)

Citation (APA):

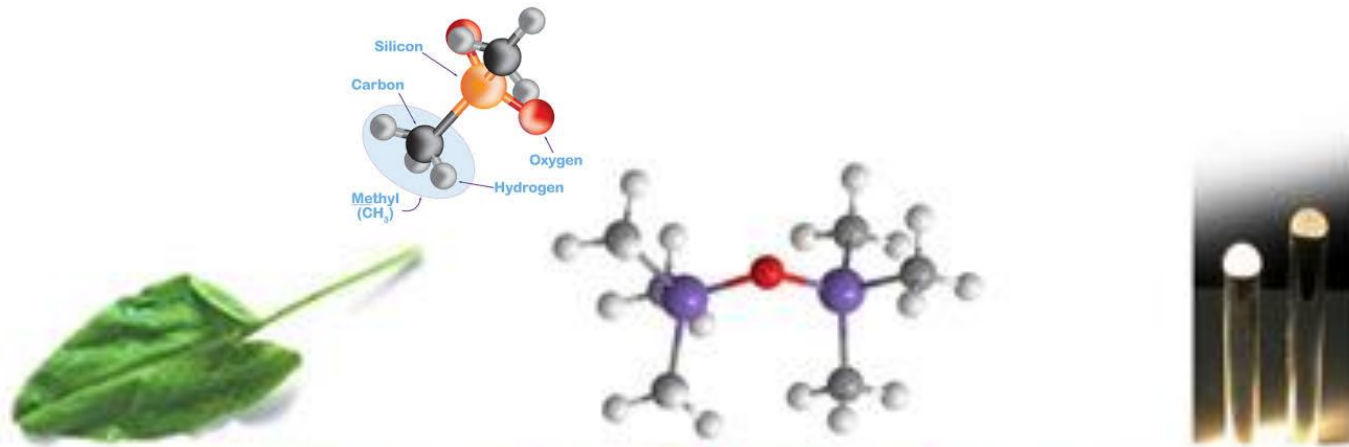
Yu, L. (Author), Madsen, F. B. (Author), Zakaria, S. B. (Author), & Skov, A. L. (Author). (2016). Silicone elastomers with superior softness and dielectric properties. Sound/Visual production (digital)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

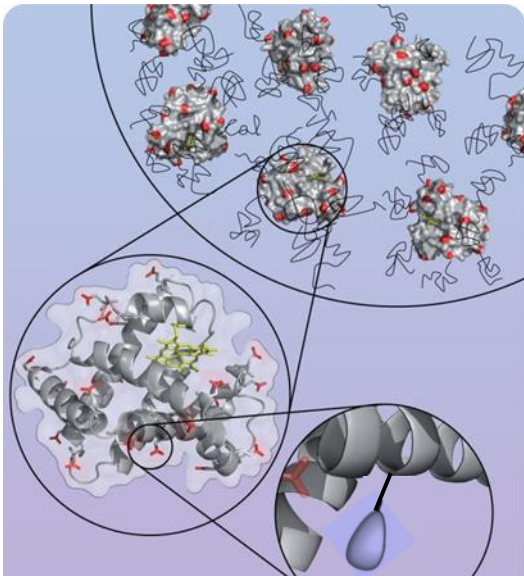
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



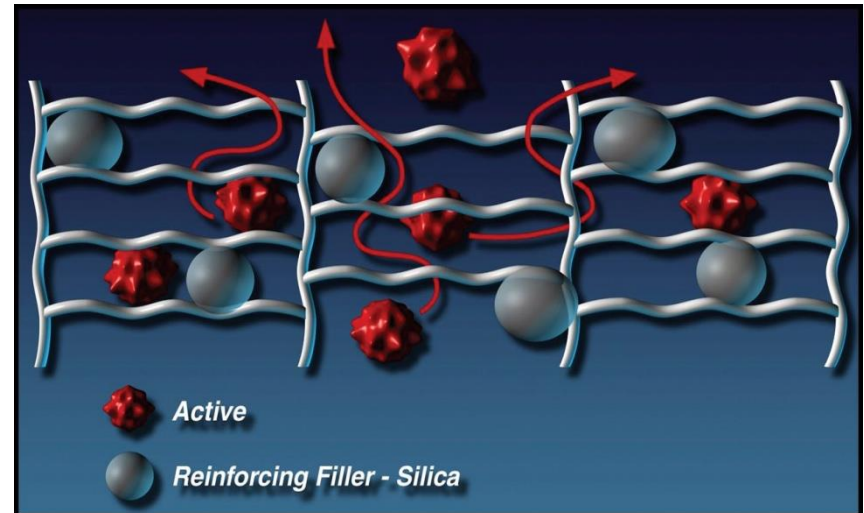
ORGANIC

Silicone

INORGANIC

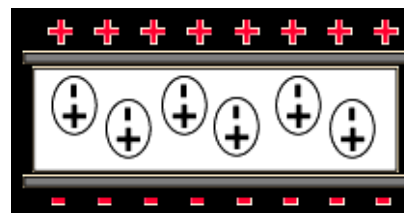


chemical modification



physical blending

$$s = \frac{\epsilon_r \epsilon_0}{Y} \left(\frac{U}{d} \right)^2$$

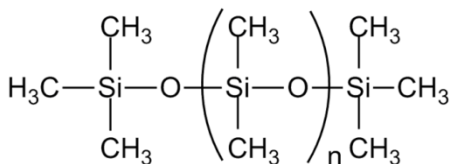


$\epsilon_r \uparrow$

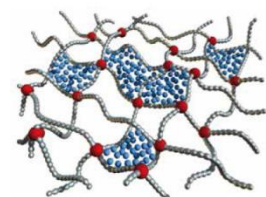


$Y \downarrow$

DMS-T22 (silicone-oil)



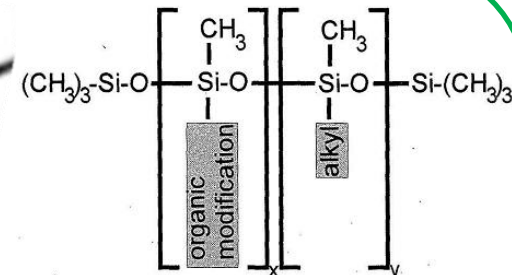
**physical
blending**



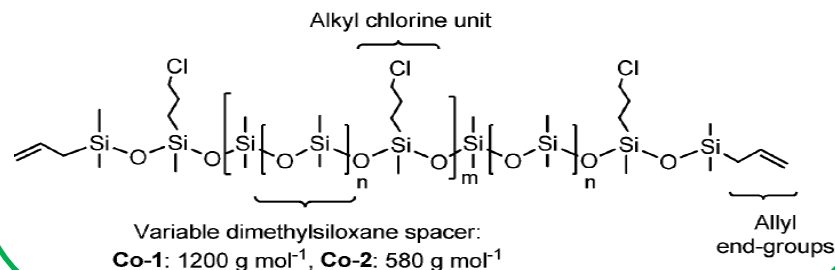
LMS-152 (chloro-oil)



**chemical
modification**



Chloropropyl-functional copolymer



Composition	Thickness (μm)	Breakdown (V/μm)	Young's modulus @ 5% strain (MPa)	Tensile strength (MPa)	Strain @ break (%)
	49	170	2.41	5.23	717
	80	66	0.15	0.65	429
		69	0.52	1.27	314
			1.90	6.51	596
			2.00	5.06	314
				1.06	254
				0.71	256
					481

No	Composition	Breakdown (V/μm)	Young's modulus @ 5% strain (MPa)	Tensile strength (MPa)	Strain @ break (%)
#0	LR3043/50	170	2.41	5.23	717
#3	LR3043/50 + 30 phr Co-1	122	1.90	4.90	596
#4	LR3043/50 + 30 phr Co-2	113	2.00	8.06	4.58
#7	LR3043/50 + 30 phr LMS-152	120	1.73	4.43	4.38
#9	LR3043/50 + 30 phr DMS-T22	98	0.87	3.01	2.99

1.2.8

Silicone elastomers with superior softness and dielectric properties